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ABSTRACT

Defining lexical familiarizations as devices by means of which an author gives a reader an understanding of newly introduced key lexis, this paper discusses familiarizations in content area textbooks. The various sections of the paper examine the following topics: (1) the forms taken by lexical familiarizations, including use of reader experience, definition and illustration, synonym, contrast with a more common meaning, and restatement in comprehensive terms; (2) prepublication aspects of lexical familiarization, such as the importance of a typographic system, appropriate choice of lexical items to be familiarized, appropriate choice of lexis, and the use of polysemous words and surface structures; and (3) the pedagogic implications of lexical familiarization for the content area specialist and the English specialist, and for textbook selection and examinations in the English language. (FL)

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LEXICAL FAMILIARIZATION IN CONTENT AREA TEXTBOOKS

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ABSTRACT

Lexical familiarizations are defined as any device by means of which the author intends to give a target reader an understanding of newly-introduced key lexis. Familiarizations in content area textbooks are examined with a view to offering advice to the author and the editor as to their presentation; and pedagogic implications are drawn.

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1. Introduction

A learner's progress in a content area subject - such as science, geography or economics - depends to a large extent on his ability to understand the terminology and concepts of that subject. When the subject is presented via a textbook (as most are), the onus rests squarely on the author and editor to ensure that newly-introduced lexical items are presented in such a way that the reader has the greatest possible likelihood of understanding their meanings. But introducing unfamiliar lexis is a highly-skilled task, as this extract from Geology for Civil Engineers shows:

> Geology is the study of the solid earth. It includes the investigation of the rocks forming the earth (petrology) and of how they are distributed over and within the earth their structure). From petrology stems interest in the constituents of rocks (mineralogy) and in the related topic of crystallography, which includes descriptions of both the atomic structure of minerals and their external appearance. Geochemistry is a related field which examines how and why the chemical compositions of rocks are different.

The authors in this instance are clearly not concerned with providing all-embracing definitions of the terminology employed, as any such definitions would be out of place in an introductory chapter designed to persuade the reader of the importance of geology in the civil engineering profession. Instead, the authors' intention is to give the reader sufficient familiarity with the lexical items introduced, to enable him to continue reading.

An in any book, the author's intention is to familiarise newly-introduced lexical items to the target reader, by verbal, illustrative

or numerical devices, or by any combination of these means. We may call these devices lexical familiarizations.

We may note at this stage two important characteristics of lexical familiarizations. The first is that the author intends to familiarize the lexical item concerned, and does not do so incidentally. For example, the word excavation is to some extent familiarized in the following extract:

> Most civil engineering projects involve some excavations of soils and rocks, or involve loading the earth by building on it. (Geology for Civil Engineers)

Excavation is partially familiarized in a contrastive manner, by means of or ... loading ... building on it. But it is clear that there is no intended familiarization.

The second characteristic is that a lexical familiarization must be intended for a specific, target reader. It would be one thing, for example, for an author to familiarize the word strata to a readership of L_1 undergraduates, but quite another situation if the target readership were L_2 lower secondary pupils.

2. The Forms Taken by Lexical Familiarizations

Familiarizations cover a wide variety of forms. My purpose in this paper is not to provide an exhaustive list of such forms - even if such a list were possible - but rather to comment on key aspects of familiarizations in general, with a view to assisting the textbook writer and editor, and to draw pedagogic implications. But the following illustrate some of the forms that familiarizations take.

2.1 Capitalizing on the Reader's Experience from outside the Text, e.g.

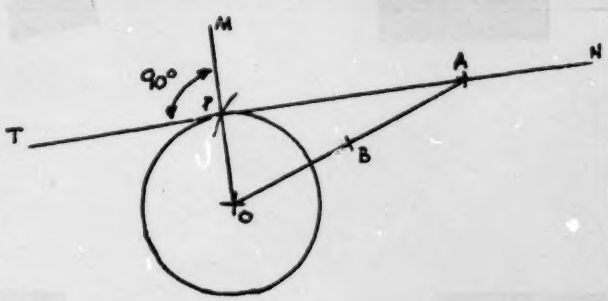
We can use our sense of sight to guess the length of a piece of rope. We can use our sense of feeling to guess the temperature of water or the weight of an object. The result we get when we are depending on our senses is an estimate.*

* 1.c. bold

(Longman Integrated Science, Book 1)

2.2 Definition + Illustration, e.g.

A line such as OM drawn at 90° to a tangent and passing through the point where the target touches the circumference of the circle is said to be 'Normal' to the curve and is sometimes called a Normal.



(Technical Drawing for CSE)

2.3 Synonym, e.g.

The courtyards and temples ... were adorned with huge curved friezes, stretching along the walls for hundreds of yards. These stone carvings ...

(Looking at Ancient History)

2.4 Contrast with the more Common Meaning, e.g.

An Economic Law

A law in the social sciences is not something which has been ordered by a government. It is a generalization which has been accepted as being consistent with observable facts. Thus it has the same meaning as in Physics, Chemistry or Biology.

(An Introduction to Economics)

2.5 Restatement in more Comprehensible Terms, e.g.

... AB is convex* to the origin, i.e. it bulges outwards.

(An Introduction to Economics)

* italics

3. Pre-publication Aspects of Lexical Familiarization

In order to comment on aspects of lexical familiarization that I feel deserve the attention of the author and editor of content area textbooks, I have studied over 500 familiarizations from 10 books, spanning junior school to university level, and covering both the L_1 and L_2 markets. The following are some of the major pre-publication aspects:

3.1 The Importance of a Typographic System

Familiarizations are more likely to be effective if the book uses a recognizable and consistent typographic system that indicates to the reader which lexical items are being familiarized. The five examples of forms given in the preceding section are presented in their context as follows:

estimate*

'Normal'

friezes

An Economic Law/ A law ...

convex*

* l.c. bold

* italics

Of these five examples, only two (estimate and convex) have been typographically distinguished from their context, thus indicating to the reader that there is something special about them. The point is that once the reader has become accustomed to the idea that this 'something special' is a familiarization, then identification and comprehension of further familiarizations are enhanced.

On the other hand, in the absence of a recognizable and consistent typographic system, the reader becomes confused. In Longman Integrated Science, for example, lower case bold serves three purposes:

(a) to indicate lexical items being familiarized;

(b) to indicate key lexical items (not being familiarized);

(c) sub-headings (not underlined).

3.2 Familiarization on First Occurrence

It goes without saying that a lexical item should be familiarized when if first occurs. Yet there are a surprisingly large number of examples of this not happening. Two occur on p.10 of Technical Drawing for CSE, where the student is asked to ... draw an arc ... and Choose a radius ... , without any explanation of the meanings of these terms. Of course, it can reasonably be argued that the student is already familiar with the meanings of arc and radius; if not, his Technical Drawing teacher can explain. But in that case, it hardly seems worthwhile familiarizing these words both verbally and by illustration on p.54.

3.3 Appropriate Choice of Lexical Items to be Familiarized

On many occasions it is difficult to discern the basis on which the author selects lexical items for familiarization. On the first two pages (pp. 5 and 6) of Looking at Ancient History, the shadoof and the Inundation are familiarized; yet a marshy plain, the base of the delta, sacred and implements - all of which are crucial for comprehension of the text and could well cause problems to the junior school pupil - are not. Of these four, the first two could easily be familiarized by means of

the map of ancient Egypt on p.5, the third by synonym, and the fourth by means of the illustration of a grave on p.6.

3.4 Appropriate Choice of Lexis in the Familiarization Itself

On many occasions it is difficult to see just how the familiarization serves any useful purpose. Sometimes this is because a key word in the familiarization is likely to be no more familiar to the reader than the lexical item it purports to throw light on, e.g.

> ... this was the age of the Preamble, which was a kind of preface to the enactment, describing often at great length the reasons for passing it, and generally justifying the measure.
>
> (English Law)

In this instance, preface is probably no advance on preamble in terms of likely familiarity; and this non-advance is further compounded by the use of the relatively unfamiliar enactment in the immediate context of preface.

3.5 Over-complicated Familiarization

Another reason why some familiarizations are likely to be relatively ineffective is that they attempt an over-complicated familiarization, as in:

> Most of an atom is empty space. So much so, that if you could press out all the space from the atoms in all the molecules that make up a camel, the dot you would have left could pass through the eye of a needle.
>
> (Science from the Beginning)

If the junior school pupil can work his way through the concep-

tualization required by this biblical analogy, then the familiarization will be very effective. Perhaps, however, more young readers would get the point if one wrote in terms of squeezing an elephant into a full-stop.

3.6 Polysemous Words

Another potential danger is the use of polysemous words (i.e. words having more than one meaning) in the lexical familiarization. In such instances, particularly with young readers, the likelihood is that the word's primary meaning will be attached. The following is an example:

> In some atoms, the nucleus is easily upset. If the nucleus in a uranium atom is upset, some stray neutrons from it may split the nuclei in other uranium atoms. We call this NUCLEUR FISSION, and it causes tremendous heat .. (Science from the Beginning)

The junior school reader is likely to attach to upset the primary meaning of "disturbed in emotional behaviour", thus reducing the familiarization's chances of success.

Williams (1980) adopted a slightly wider interpretation of polysemous words, to include those of the found/founded type that occur in the L_2 situation. Three familiarizations containing polysemous words were included in a vocabulary test administered to secondary Form 1 Hong Kong pupils as part of a readability research project. The result of these three items were:

(1) Ethyl alcohol = the base of common alcohol found in alcoholic drinks.

50% (a) bottom part

42% ✓(b) chief part, main ingredient

8% (c) poison

(2) Some villages trace their history back over a thousand years to one man. All the villages still have his name. This man founded the village. He and his sons cleared the land of trees. They farmed it together.

25% (a) fought for, captured in a battle

48% (b) found, discovered

27% ✓(c) started, established

(3) A concubine = a lesser wife or a wife not legally married to her husband.

51% (a) smaller

30% ✓(b) not as important as the others

19% (c) younger

(n = 259)

The results of these test items offer strong evidence of the confusion that polysemous words are likely to cause L_2 readers. What, for example, might the young L_2 reader make of the following?

> If there is a fire hazard, e.g. if the staircases are blocked (? as in a block of flats, e.g. Tai Wan Estate, Block 6) with goods (? opposite of bad), the owners must put the matter right (? as in right-hand).

The problems inherent in polysemous words are also very evident

in the L_1 situation, as indicated by the work of Mason, Kniseley and Kendall (1979) with U.S. grade school pupils.

3.7 Polysemous Surface Structures

In addition to polysemous words, there is also the risk of polysemous surface structures being used in familiarizations. The most common example of this is the X or Y structure, as in:

> ... the main right of a borrower (or mortgagor) is the the right to redeem (or recover) the land he has used as a security for the loan.
> (English Law)

The question is whether the or signals a lexical familiarization, or an alternative.

In the Hong Kong study, I investigated pupils' interpretation of this X or Y structure, by selecting 12 extracts in which it occurred. In 5, the authors' intention was familiarization, and in the other 7 it was alternative. Pupils (n = 261) were asked to say whether they considered the X and Y to be SAME or DIFFERENT. The result for the 12 test items was a mean score of 6.03, i.e. a score almost identical to what would have resulted from sheer guesswork. The mean percentage of correct scores for the 5 familiarizing items was 54. These results show pupils to be thoroughly confused by the use of the X or Y structure to carry two quite different (almost opposite) functions.

The X or Y problem is further compounded by there being no standard practice as to which appears first, the familiar or the unfamiliar. Thus we have:

> ... "pink-eye" or conjunctivitis
> ... an oculist or eye-doctor (Living Hong Kong Social Studies 1C)

If only publishers would standardize on an unfamiliar or familiar sequence, this would assist the reader to identify the structure's familiarization function. But the safer course, particularly with young readers, is not to use the X or Y structure at all in lexical familiarizations.

3.8 Where should Familiarizations Occur?

The six most common individual options appear to be: (a) at the start of each chapter, as a "key words" preface; (b) at the end of each chapter, as a mini-glossary; (c) at the end of the book as a standard glossary; (d) as part of the text itself; (e) throughout the text in margins/footnotes; and (f) as part of an (annotated) illustration. In practice in any one book, of course, the usual choice is a combination of two or more options.

The important point about the glosses in (a), (b) and (c) relates back to one of the two characteristics of a lexical familiarization noted earlier, namely, that it is written for a specific, target readership. That being so, a definition lifted straight from a dictionary is seldom likely to be effective. Instead, the author should couch the gloss in words, in a linguistic structure, and in already-familiar concepts that the reader can relate to. For example, for lower secondary L_2 readers,

stationary = not moving

is more likely to be effective than

a campaign = a series of actions organized to produce a particular result

(Living Hong Kong Social Studies 1C)

In contrast to glossaries, familiarizing newly-introduced lexical items throughout the text (d) as part of the text itself, (e) in margins/footnotes, and (f) as part of an illustration, offers far greater flexibility. Equally important, it is more natural, in that the familiarization and the lexical item in its natural occurrence are physically closer to each other than in a glossary. They are normally closest in an intra-text verbal familiarization. But where that is not the most appropriate form (perhaps because such a familiarization would interfere with the discourse flow), then greater use could be made of marginal familiarization, in small print.

3.9 Familiarization by Illustration

The possibility for lexical familiarization that appears to be least well exploited is that of illustration, and the specific opportunity so often lost is that of interaction between illustration and text. Educative illustrations can have a very real impact on familiarization (and, of course, on the wider area of readability). Unfortunately, many illustrations at best are only language supportive, at worst merely cosmetic. Very rarely do illustrations themselves (+ annotation) provide access to the meaning of unfamiliar lexis independent of text. And for a young reader (especially the young L_2 reader) of low reading ability, this is crucial. One finds examples of a related illustration confusing the reader by being presented together with a verbal familiarization of a different lexical item; of a series of illustrations being presented in a different sequence to the verbal familiarization they are intended to support (e.g. text: galaxy, universe, constellation; illustration: universe, galaxy, constellation); of difficulty in deciding which caption and annotation relate to which illustration.

Far too often, text and illustrations appear to have been produced quite independently, and to have come together relatively late in the editorial process. The result is an unhappy marriage, which does little to familiarize new lexis.

4. Pedagogic Implications

What pedagogic implications might we deduce from these aspects of lexical familiarization? I suggest there are implications in four directions.

4.1 Textbook Selection

An important factor in textbook choice should be readability; and an important component of readability is how well lexical familiarization is handled. Therefore I suggest a checklist that book purchasers might follow when selecting a book for bulk purchase:

(a) Is it clear to the reader when a lexical item is being familiarized? In other words, does the book have a typographic system for familiarization?

(b) Is this system consistent?

(c) Does the book contain an index, and does that index distinguish (again by a typographic device) between lexical items that are familiarized in the main body of the book, and those that are not?

(d) Are the lexical familiarizations likely to do their job for the target readership?

(e) Are the familiarization forms chosen the most appropriate? In particular, has the author made sufficient use of non-verbal devices?

(f) If illustrative familiarizations are included, what degree

of interaction between illustration and text is there, and how successful is it?

(g) Are familiarizations followed up - by presentation in a different context, in an exercise, in a diagram, in an end-of-chapter summary, etc.?

(h) If the book contains a glossary, is the language of the glosses suitable for the target readership?

(i) Are there instances of non-familiarization of key terminology?

4.2 The Content Area Specialist

The content area specialist should, of course, be thoroughly familiar with the lexical familiarization system of the textbook concerned, along the lines of the checklist just suggested. He should in particular be on the look-out for instances of non-familiarization of key terminology, and be prepared to familiarize those items in an appropriate form. He should also be on the look-out for instances of familiarizations that are incorrect, incomplete, or downright confusing - and be prepared to offer alternatives.

4.3 The English Specialist

If we accept that one of the major purposes of teaching reading is to assist pupils and students to read content area textbooks, and if we further accept that understanding such textbooks is intrinsically bound up with understanding the terminology of those subjects, then it follows that one of the tasks of the English specialist is to assist readers to recognize and understand a wide variety of types of familiarization. Texts would mostly be of general interest, non-content area origin; but might profitably on occasion be taken from content area text-

books in current use, so as to impress on readers the relevance of the familiarization exercises concerned.

Following Barrett's taxonomy (Crisp. 1978) of question-types, the following are examples of work that might profitably be done:

(a) Identification: Which of the following words have their meanings explained? A, B, C, D ... (This involves the identification of common typographic and linguistic devices used in familiarizations).

(b) Reorganization: Classify A, B, C, D ... (This requires an analysis of the content of each of a set of familiarizations that lend themselves to classification. The reader now has to present the familiarizations in a different organizational pattern, according to a different criterion.)

(c) Inferential: If you VERBed X, would it ...? (The reader now has to go beyond the content of the familiarization, and apply that content to an as-yet unexplored area.)

(d) Evaluative: Do you think the explanation of X is a good one? Is there anything else you need to know at this stage of the text? (The reader is expressing a critical judgement as to the efficacy of the familiarization.)

(e) Appreciative (rare in relation to familiarizations in content area textbooks): How did you feel when you read X?

4.4 English Examinations

Finally, there are implications for English Language examinations, in that examining boards might well consider including

questions of the type suggested above. At present, lexis questions in school-leaving examination papers most commonly call for an explanation of the meaning of a word or phrase "in its context", which usually means the textual situation in which the word is set. Very rarely do examining bodies set lexis questions in which the context is a familiarization of the type that students meet in real life between the coyers of their content area textbooks.

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